ABSTRACT

AN OPTICAL WAVEGUIDE STRUCTURE

A waveguide structure according to the invention comprises a core layer (10), having a refractive index n_{core}, and an array of rods (11) in the core layer having a refractive index n_{rods}. The refractive indices satisfy the inequality:

$$n_{rods} > n_{core.}$$

In a planar waveguide structure buffer (12) and cladding (13) layers are included, having a refractive index n_{buffer} and $n_{cladding}$ respectively. The refractive indices then satisfy the inequality:

$$n_{rods} > n_{core} > n_{cladding} \text{ and } n_{buffer.}$$

This condition provides greater vertical confinement of the E-field of an optical signal passing through the waveguide. Furthermore, it allows waveguides to be formed of a glassy material having a similar refractive index and core dimensions to that of a fibre. A high refractive index contrast within the photonic crystal region is used while totally eliminating the need for mode conversion to launch light in and out of the waveguide.

(Figure 2)